



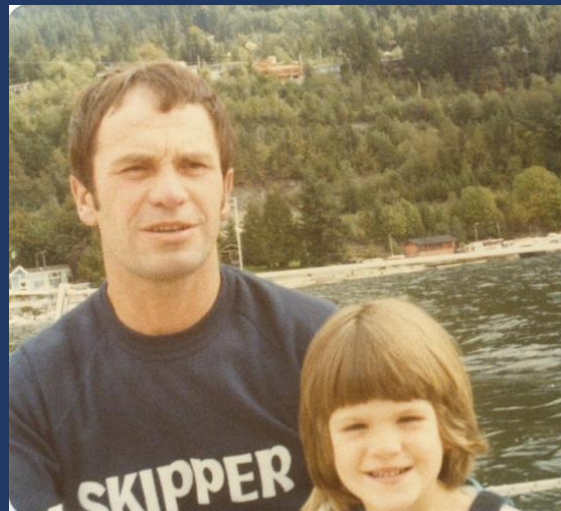
# Shore Friendly Kitsap Landowner Workshop



Christina Kereki & Amy Smalley,  
Kitsap County  
April 15, 2026

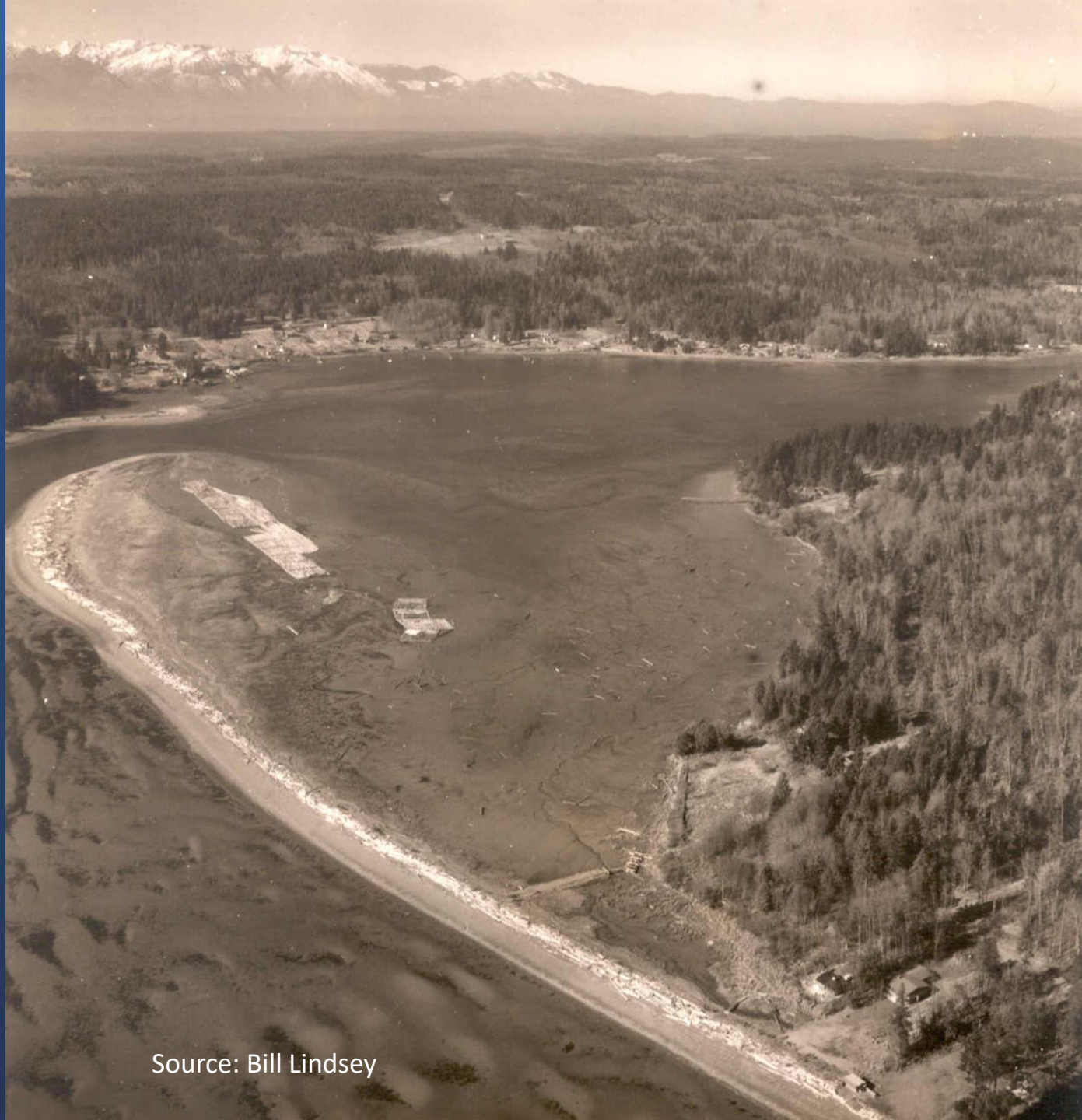


# Shore Friendly Kitsap Program Overview



**Christina Kereki**  
**Shore Friendly Kitsap**  
**Coordinator**  
**Kitsap County**

**April 15, 2026**  
**Kingston, WA**



Indianola Spit,  
Miller Bay  
1952

Source: Bill Lindsey

# Indianola Spit 2006 and 2016



2006



2016



## Tonight's Goal:

Provide you information and tools to take care of your shoreline property that works with nature, protects ecosystem services and protects your property.



What is the Shore Friendly Program?



# www.shorefriendly.org



This project has been funded wholly or in part through the Washington Department of Fish and Wildlife, Estuary and Salmon Restoration Program.



# Mission

To empower Puget Sound waterfront landowners to create beautiful, environmentally friendly shorelines for themselves and generations come



# Kitsap County in Central Puget Sound

- 265 miles of marine waterfront
- 201 miles are residential

# Why care about Shorelines and Beaches?

- Important because they provide ECOSYSTEM SERVICES

## Ecosystem Services

- Benefits that people get from the ecosystem; seafood, shellfish, salmon, clean water, recreation, beaches, well being

Nearshore connects the uplands and the water

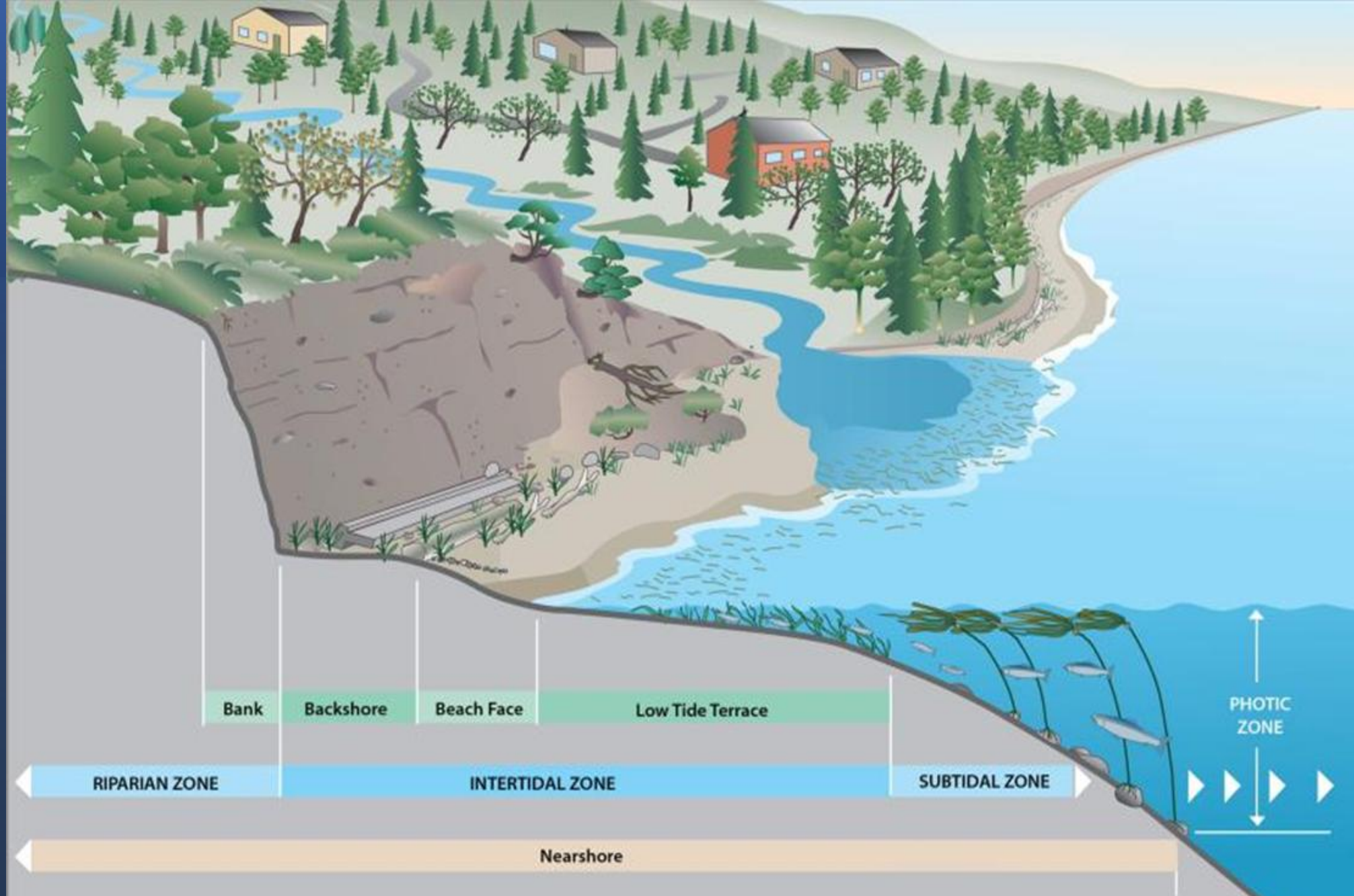
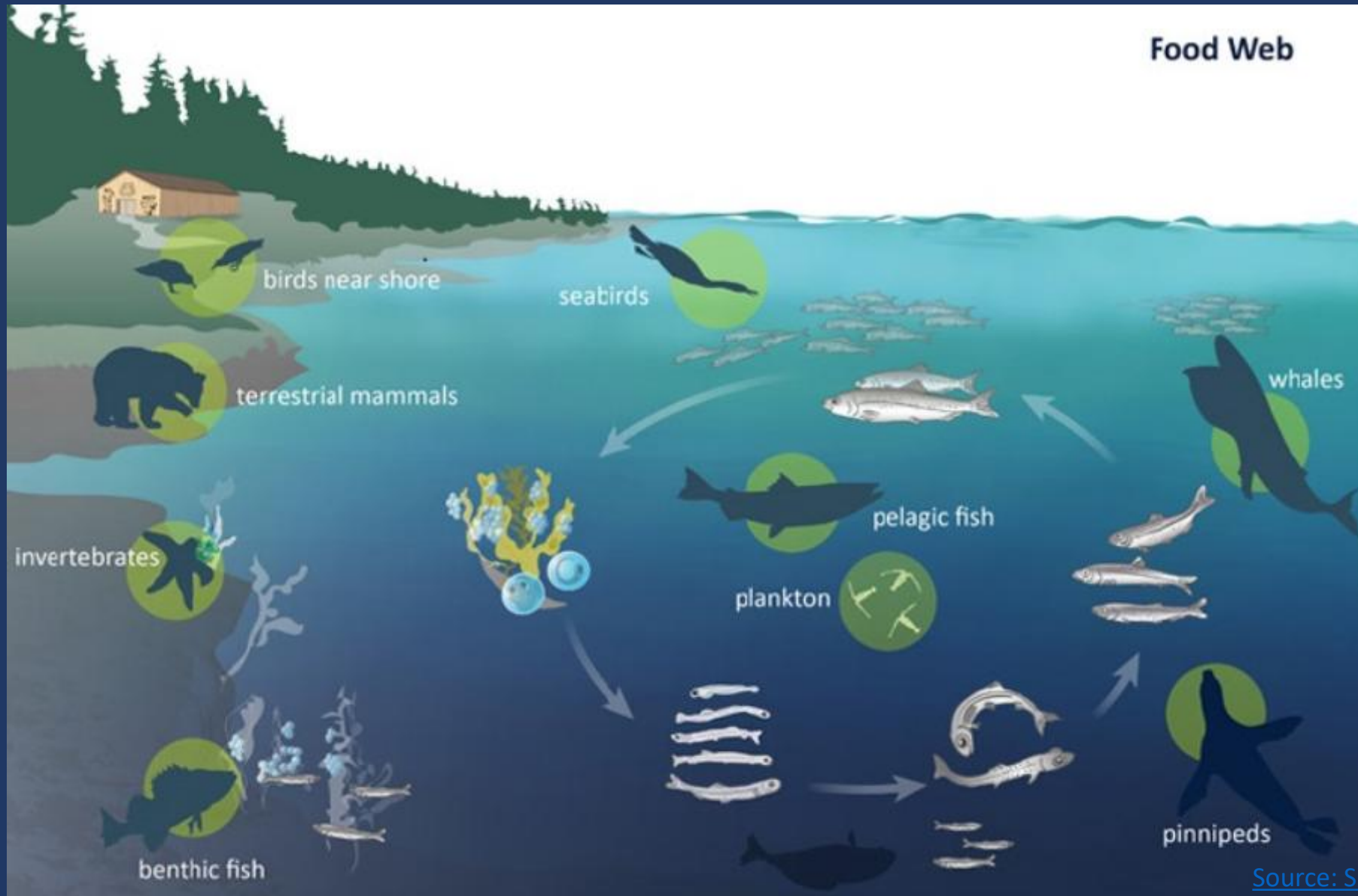


Diagram by King County

# Shorelines (nearshore) as Keystone Ecosystem



# Shorelines (nearshore) as Keystone Ecosystem

- SEDIMENTS - important to build our beaches
- FORAGE FISH - surf smelt, Pacific sand lance, herring
- RIPARIAN VEGETATION – native vegetation along marine shores

# Sediments

- Sands and gravels from bluffs are key for building up beaches



# Forage Fish

## BEACH SPAWNERS

Surf smelt



Larval smelt

## PELAGIC SPAWNERS (eelgrass & kelp)

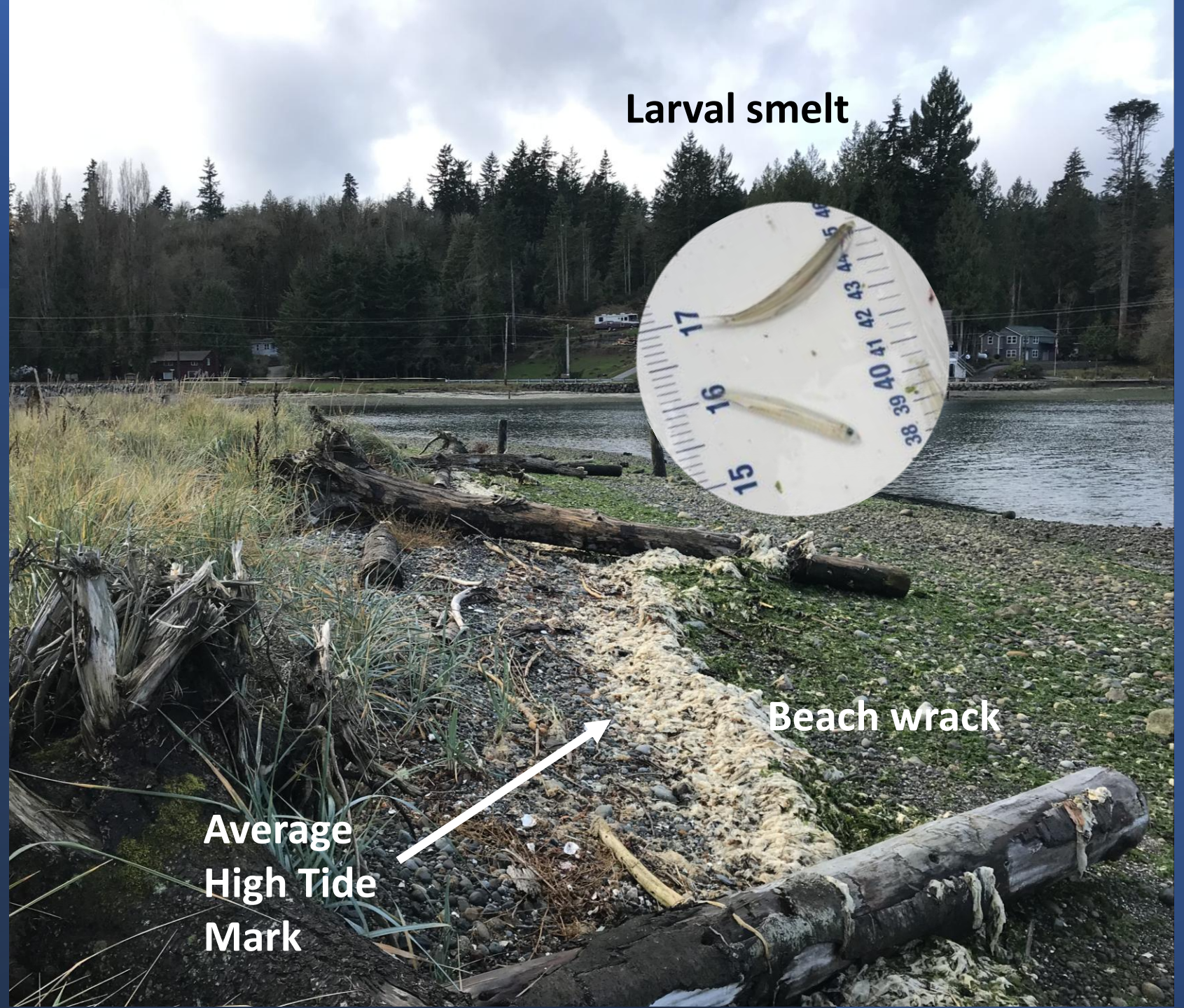


Herring

Pacific sand lance



# Forage Fish Spawning



Larval smelt

Beach wrack

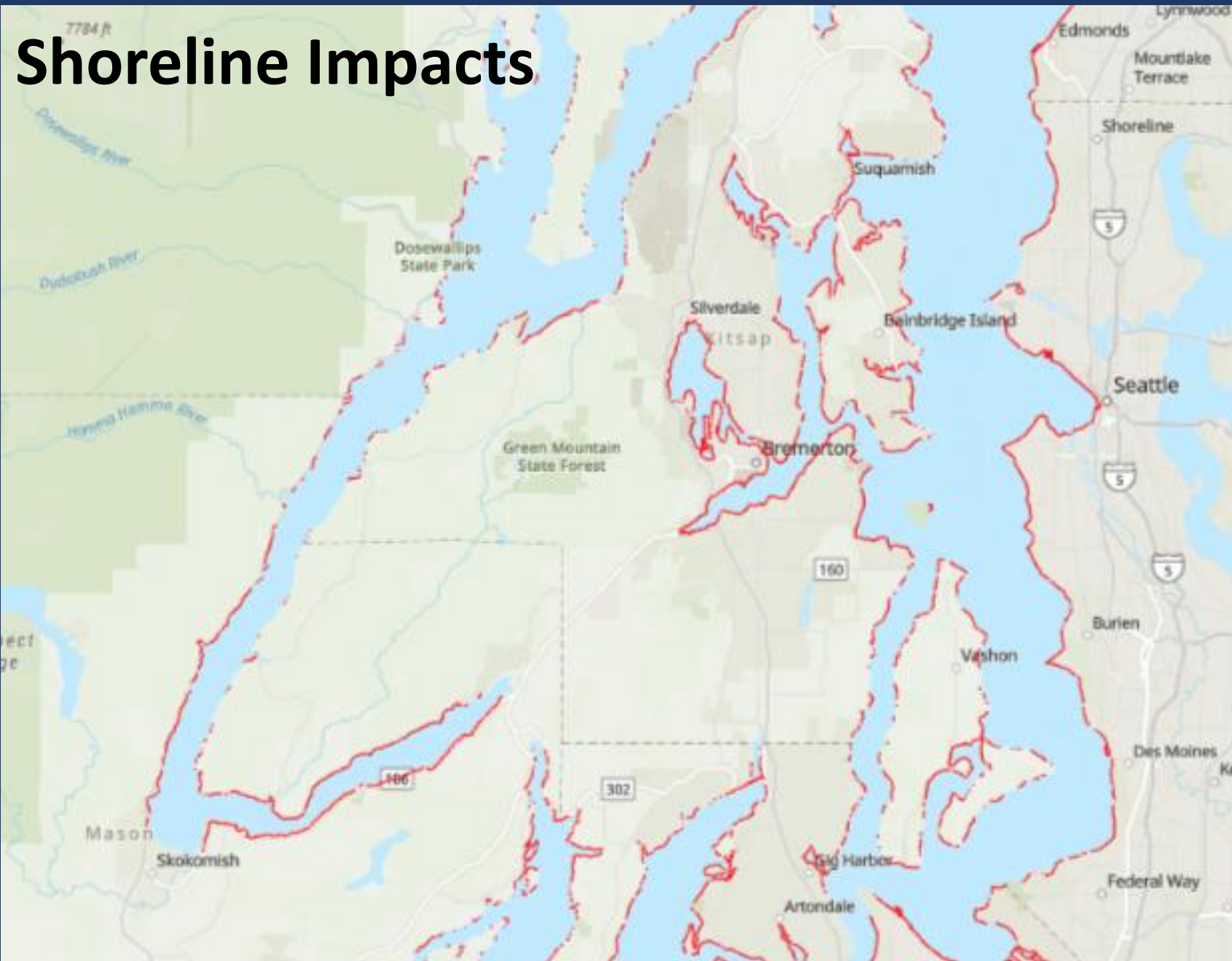
Average  
High Tide  
Mark

# Riparian Vegetation




**Healthy Puget Sound Beaches are messy**

# Shoreline Impacts



Shoreline Armoring

 Armored shoreline

Coastal Atlas Map  
<https://apps.ecology.wa.gov/coastalatlasmapp>

# Shoreline Armor (Bulkheads) Impacts



On top of spawning beaches

**Interrupts  
sediment  
flow**

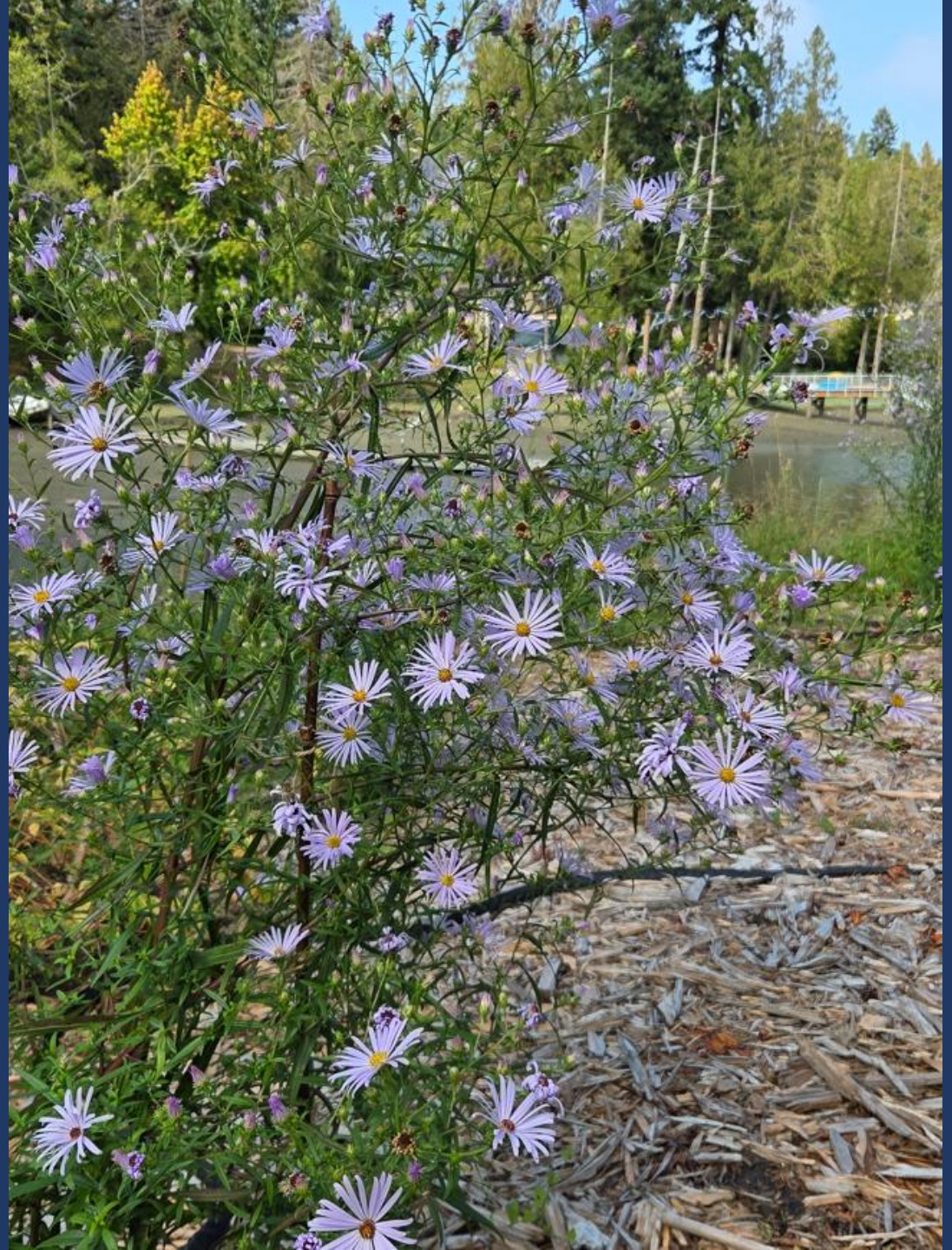


**Toxic  
materials:  
Creosote**









# Outreach and Incentives





Kitsap County - Government

Admin · March 28 at 1:03 PM · 🌐

🌊 Join Us for a Beach Walk Tomorrow! 🌊

We're excited for another Shore Friendly Beach Walk happening *tomorrow*! If you missed our last post, here's your reminder to join us for a guided walk along the shoreline and riparian area where we'll explore beach ecology, erosion, and shoreline stewardship.

📅 **Date:** March 29, 2025

📍 **Location:** Anderson Point Park

🕒 **Time:** 10:00am

Don't forget to dress for the weather and bring your curiosity! See you on the beach!

**EXPLORE THE BEACH OF  
ANDERSON POINT PARK WITH  
YOUR LOCAL SHORE FRIENDLY!**

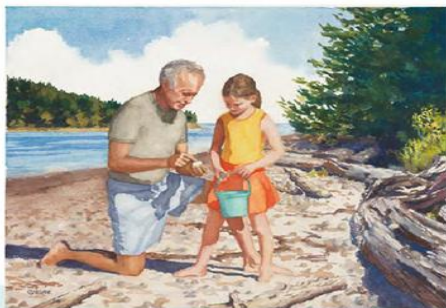
Learn about upland connections, erosion,  
sediment movement, and the wildlife and plants  
that thrive in natural shorelines!

**Saturday, March 29 from 10:00 am - 11:30 pm**

SCAN ME

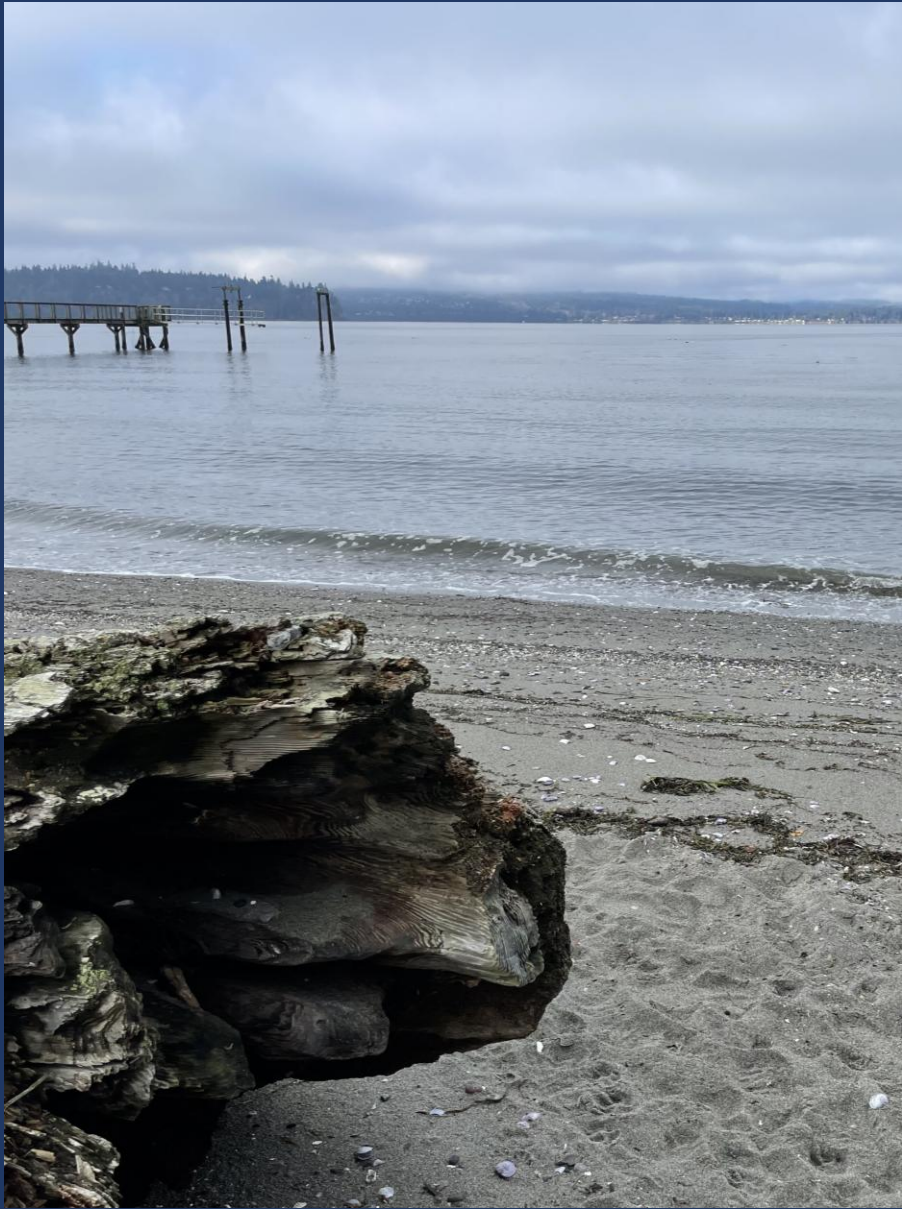


## Waterfront Living



On the  
**Kitsap Peninsula**

- Events
- Facebook Group
- Newsletter
- Mailings





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**CARING FOR  
YOUR  
MARINE  
SHORELINE:**

**A landowner  
workshop**

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Break

End

# Importance of Shoreline Vegetation in the Marine Food Web



# Eelgrass and Herring



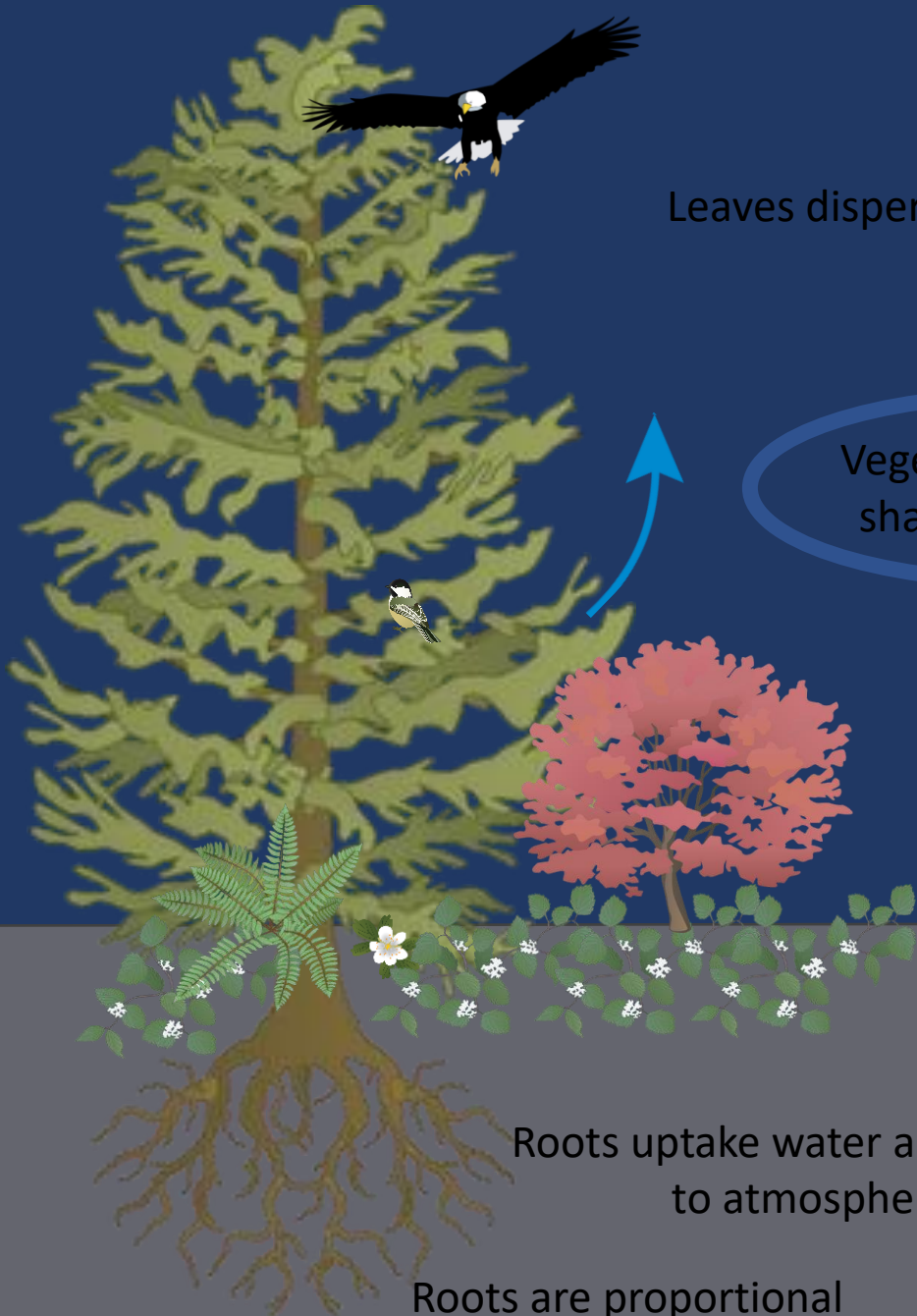
Source: Steve Todd, Suquamish Tribe



Source: Steve Todd, Suquamish Tribe



Herring

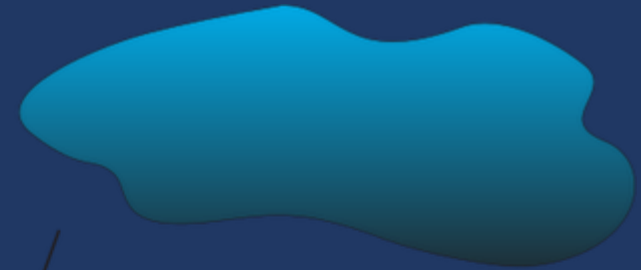


Leaves disperse rain fall

Vegetation provides shade and habitat

Roots uptake water and release to atmosphere

Roots are proportional to the size of plant



Grasses and groundcover trap soil and prevent surface soil erosion

Shrub roots stabilize top soil layers

Tree roots tie soil layers together



# Eelgrass



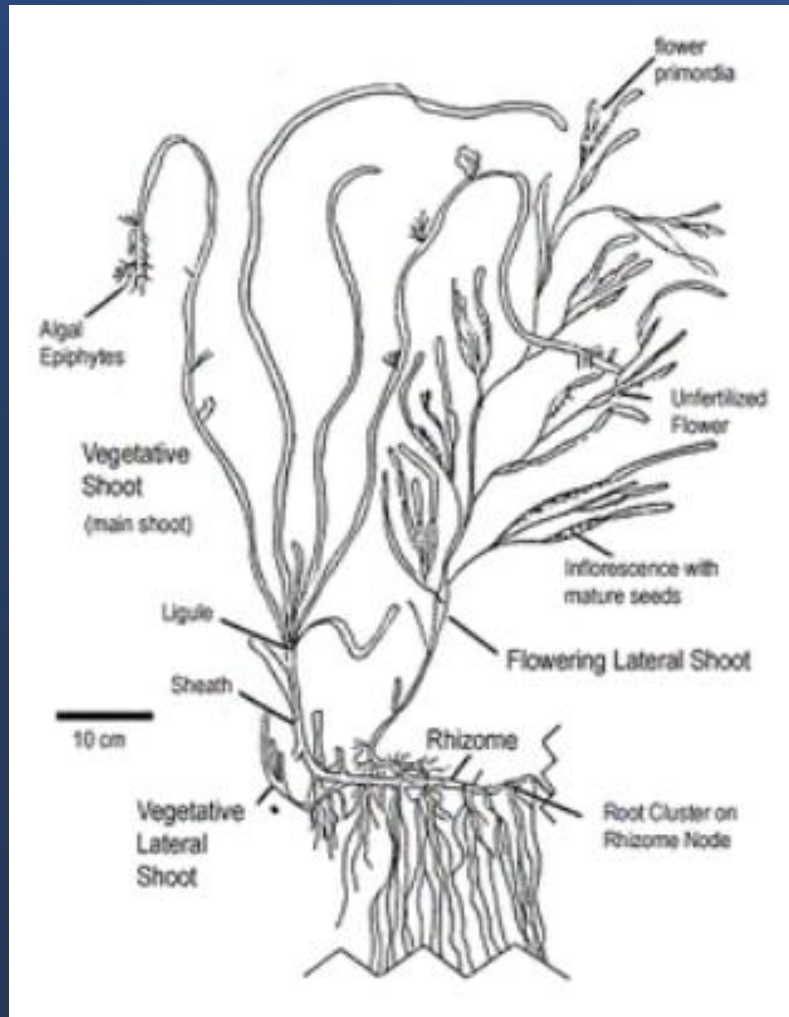
Source: USGS



Source: Elisa Dawson

# Kelp

# Eelgrass ... more



Source: The Restoration Project



Source: Amy Smalley

# Sugar Kelp

Sugar kelp (*Saccharina latissima*)  
Squaxin Island.  
Photo by Helen Berry.



# Bull Kelp



Source: Elisa Dawson

# Ulva – sea lettuce



Eutrophication



Source: Christina Kereki

# Salmonids



Juvenile (140 mm FL): parr marks faded



Juvenile (101 mm FL)



Juvenile (77 mm FL): dark, wide parr marks extending well below lateral line

Source: NOAA Fisheries

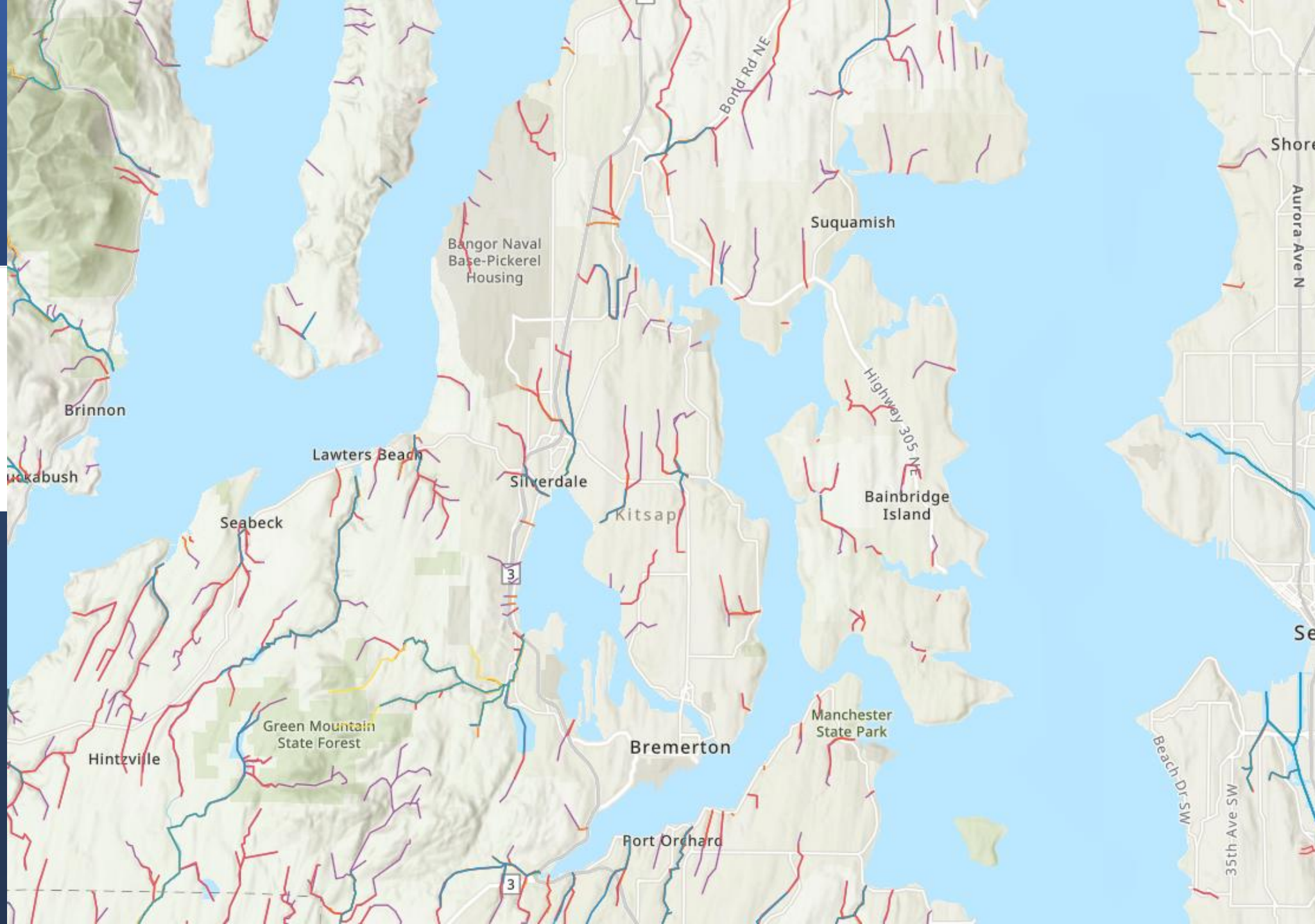
Source: Alaska Fish and Game



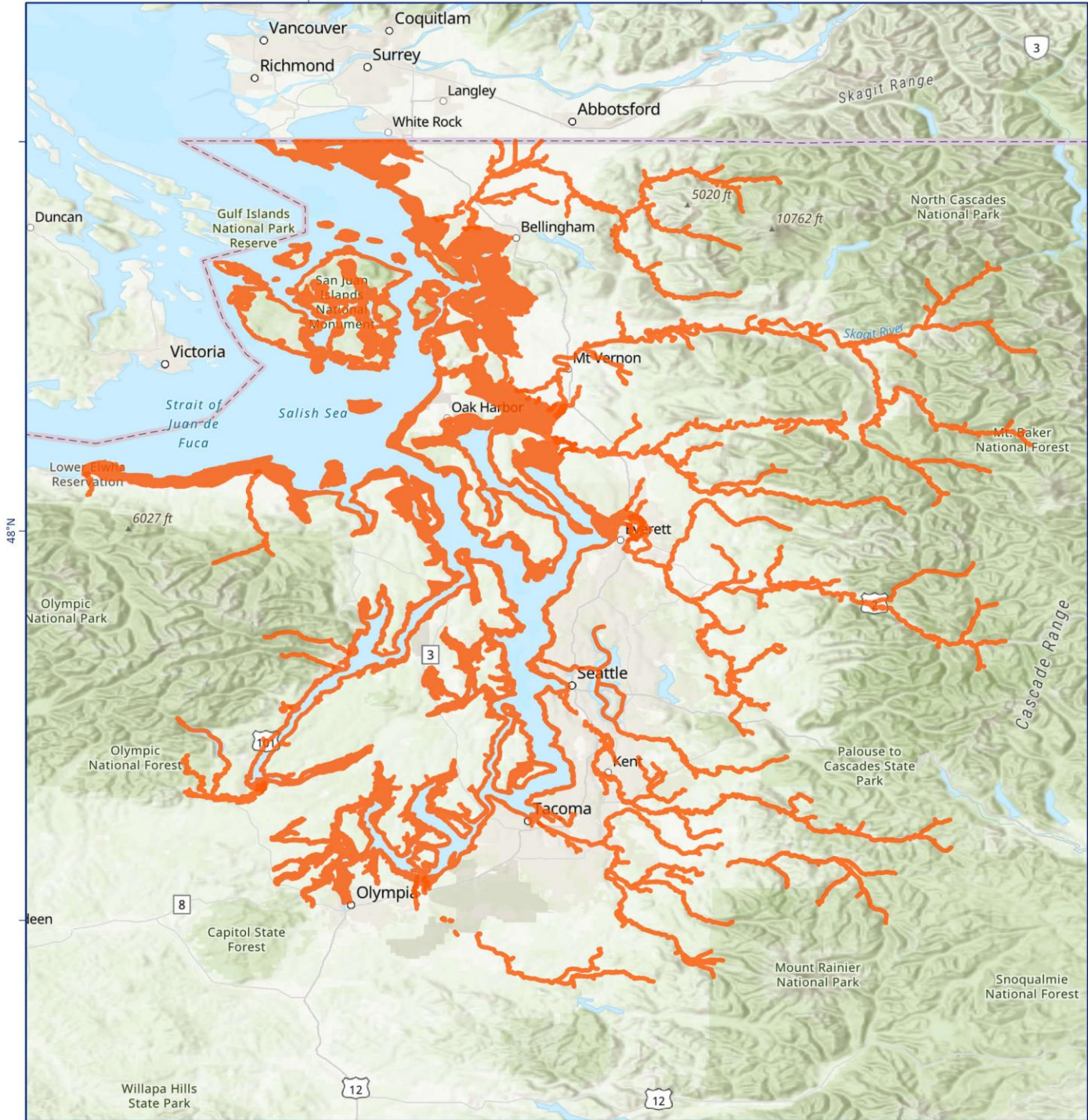
# Salmon species distribution in Kitsap County

## WA Fish Distribution SWIFD

-  Coho Salmon
-  Steelhead Trout
-  Chinook Salmon
-  Cutthroat Trout
-  Chum Salmon



# Critical habitat for Chinook salmon



critical habitat

0 26 52 km

NOAA FISHERIES

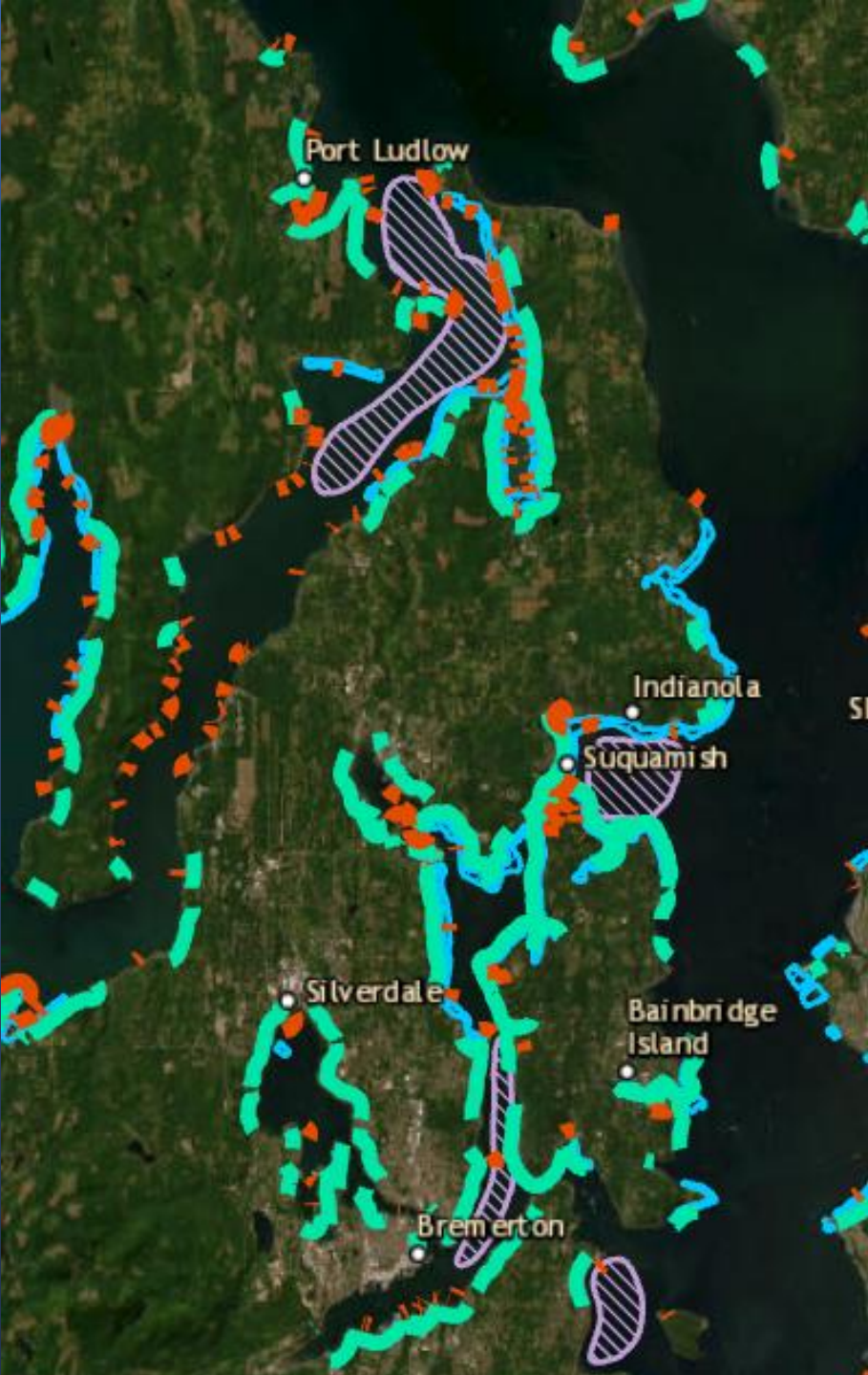
U.S. FISH AND WILDLIFE SERVICE

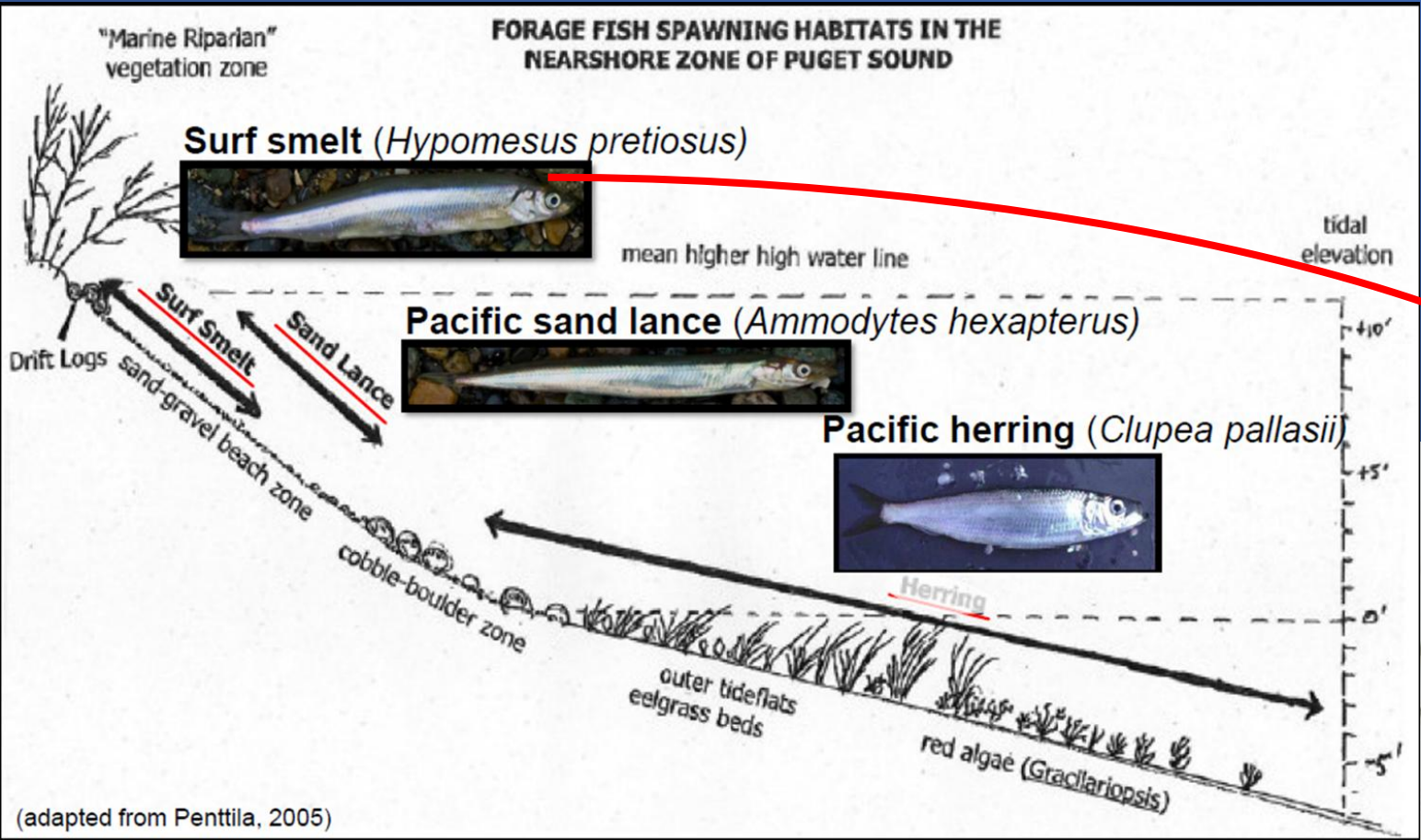
# Forage Fish spawning locations

**Legend**

**Forage Fish Spawning Data**

- Sand Lance Spawning  
—
- Smelt Spawning  
—
- Herring Spawning  
—
- Pre-spawner Herring Holding Areas  
—





Surf smelt eggs  
adhering to grains of  
sand and gravel





## Vegetation contributions to nearshore:

- Large wood
- Structure
- Habitat

- Detritus
- Food Web
- Shade

⋮



Oystercatcher



Photo: All About Birds

Surf scoter



King County

Glaucous winged gull



King County

Killdeer



King County

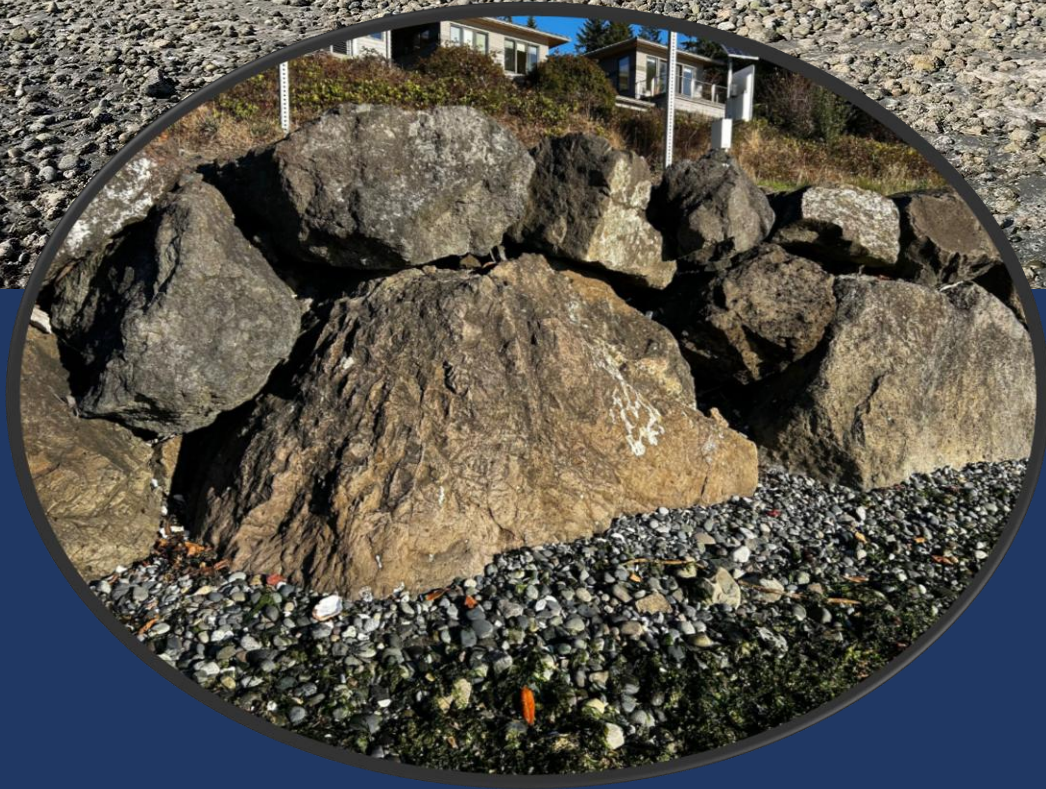
Dunlin

# Any Questions?

Belted  
kingfisher

Source: Angie Hanners





# Shoreline armor doesn't:

Prevent Coastal Flooding



Prevent Bluff Erosion



# Ecological Impacts

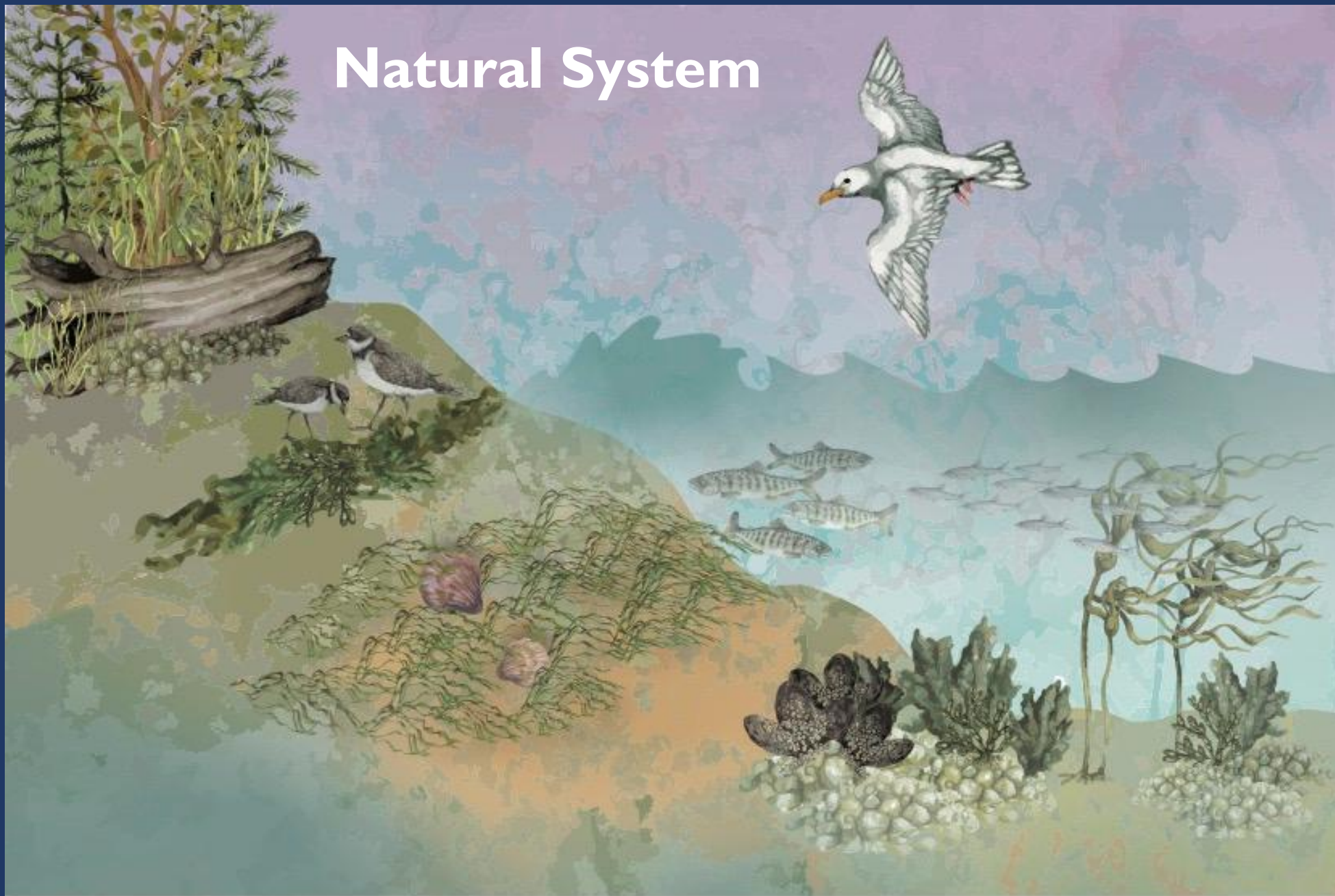


- **Reduced sediment input**
- **Burial of beach and forage fish spawning habitat**
- **Loss of beach wrack and LWD**

Illustrations courtesy of Simone Des Roches

<https://www.simonedr.com/>

# Natural System

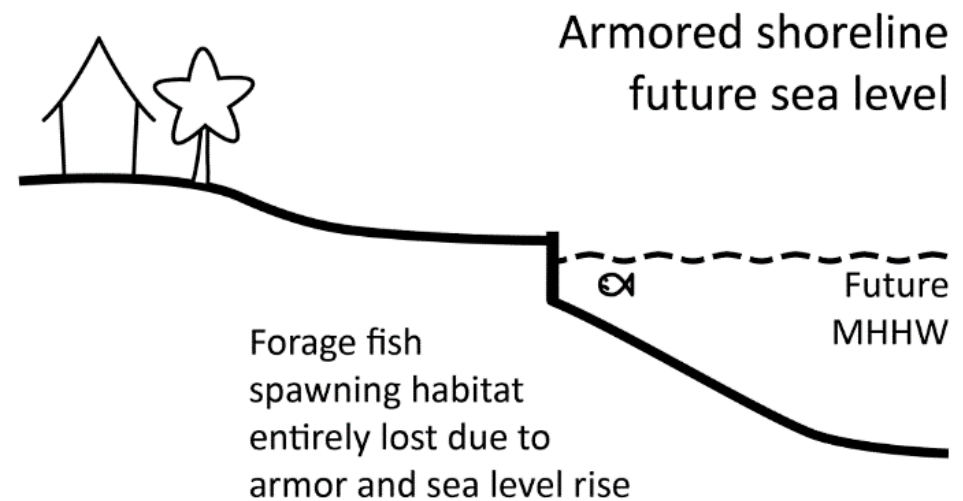
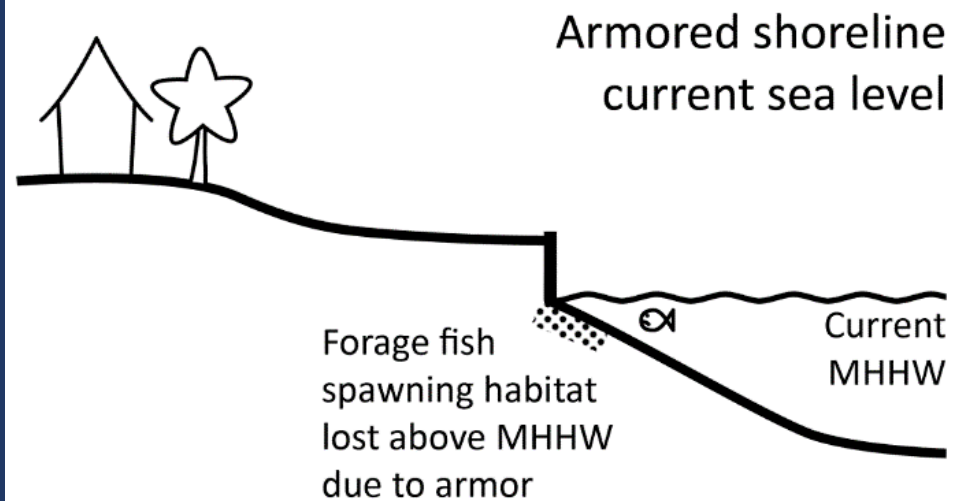
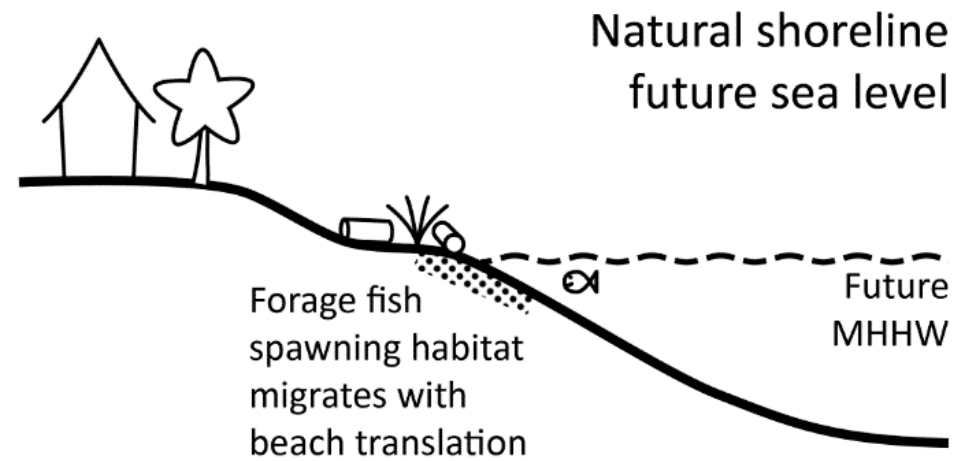
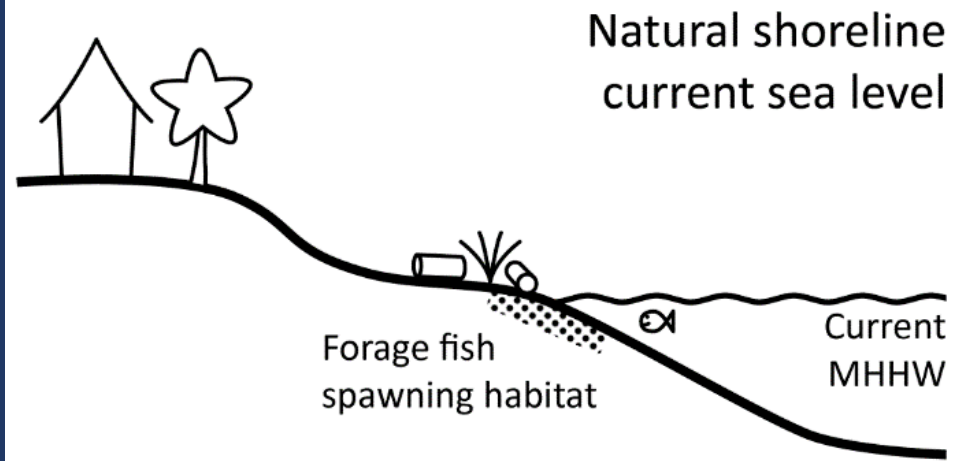


- **Connected Habitat**
- **Space for forage fish spawning habitat**

Illustrations courtesy of Simone Des Roches

<https://www.simonedr.com/>

# The Coastal Squeeze



# SUMMARY

## Shoreline Armor Impacts

- Simplified Habitats
- Loss of habitat connectivity
- Reduced sediment input
- Burial of beach and fish spawning habitat
- Loss of backshore berm
- Increase wave reflection
- Beach scour / erosion
- Loss of fines (sands)

# Shoreline Bulkhead Impacts

**Any Questions?**

# Indicators of Ecosystem Health

## Beaches and Marine Vegetation:

Feeder bluffs in functional condition.

